

## RESEARCH REPORT DOCUMENTATION PAGE

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12. Performing Organization Name and Address  NDDOT M+R <input checked="" type="checkbox"/> North Dakota DOT NDDOT OTHER* <input type="checkbox"/> Materials and Research Division NDSU <input type="checkbox"/> 300 Airport Road UND <input type="checkbox"/> Bismarck ND 58504-6005 UGPTI <input type="checkbox"/> OTHER* <input type="checkbox"/> *see supplementary notes		13. Sponsoring Agency Name and Address  North Dakota DOT Materials and Research Division 300 Airport Road Bismarck ND 58504-6005	
14. Supplementary Notes			
15. Abstract  <b><u>Purpose and Need</u></b>  The North Dakota Department of Transportation (NDDOT) has been constructing dowel bar retrofit projects since 1995 to restore load transfer across transfer joints in plain jointed concrete pavements. While this rehabilitation has worked to restore load transfer, the patch mix material used has durability problems. There are several commercially available patch mixes available on the market and the NDDOT has used a number of them. The mixes are expensive and suffer from durability problems such as; raveling, shrinkage cracks (leads to debonding and loss of load transfer), and spalling. These mixes also set up very quickly and can lead to little or no mix under the dowel bar which leads to the patch mix material breaking loose in the slot and load transfer is lost. There is a need for a low cost patch mix material using locally available materials.  <b><u>Objective</u></b>  The objective of this applied research will be to evaluate the patch mix developed at NDSU. This objective will be met by utilizing this patch mix in a dowel bar retrofit project and monitor the performance and effectiveness of this mix.  <b><u>Scope</u></b>  Project number AC-IM-8-094(041)342 in the Fargo District was identified. The project location is in the westbound lane, located at exit 342 on US Interstate 94. The project will be evaluated every year for five years or until failure of the patch mix. The items will be evaluated for visual durability and visual distresses in the patch mix as well as load transfer across the joints utilizing Falling Weight Deflectometer.  <b><u>Summary</u></b>  The production rates achieved during construction with the experimental mix will probably not allow the experimental mix to be competitive, (on a construction cost basis) with other proprietary mixes currently used. The experimental mix has also shown more distresses than control section 1 or control section 2 and lower load transfer efficiency.			
16. Key Words  Dowel Bars Concrete Load Transfer	17. Distribution Statement No restrictions. This document is available to the public from:  North Dakota Department of Transportation Materials and Research Division: 300 Airport Road Bismarck ND 58504-6005 Office: (701) 328-6900 (701) 328 -0310		18. No. of Pages 52  19. File type/Size pdf/ 1 mb